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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/508,713	07/07/2000	GLENN NORMAN DICKINS	LAKE012	7553
21921	7590	10/19/2005	EXAMINER	
DOV ROSENFELD 5507 COLLEGE AVE SUITE 2 OAKLAND, CA 94618			LEE, PING	
		ART UNIT		PAPER NUMBER
				2644

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/508,713	DICKINS ET AL.	
	Examiner	Art Unit	
	Ping Lee	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 08 August 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 6,13-35,50 and 51 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-5,7-12 and 36-49 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of species I in the reply filed on 8/8/05 is acknowledged.

2. Applicant's election with traverse of Species I in the reply filed on 8/8/05 is acknowledged. The traversal is on the ground(s) that generic claim should be identified and reasoning for the different species is improper. This is not found persuasive because there is no claim in the present invention that is common to all the species as listed. As indicated on p. 16 of the remark, claim 1, for example, is common to Species I, II and III. However, claim 1 is not belonged to any one of Species VII, IX and X. Therefore, no claim is generic. The reason for species requirement is that the species lack the same or corresponding special technical feature. Applicant argued each species separately based on the figure and claims common to several species. Examiner would like to use only Fig. 3 and claims 1-4 for explanation. The same reasoning applied to all species. As discussed in the telephone interview, Fig. 3 is the generic version of at least the embodiment in Figs. 4-9. Fig. 3 does not show AC-3 inputs specifically. The specific example of Fig. 3 with AC-3 inputs is shown in Fig. 4. Claims 1-4, for example, do not specifically claim AC-3, they also do not limit the invention exclude AC-3 inputs, or stereo inputs. Therefore, claims 1-4 are common to several claimed species. Claims 1-4 read on several species. So long as each special technical feature has been identified for each species, the election requirement is

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proper. Since examiner has identified special technical feature for each species, the election is proper.

The requirement is still deemed proper and is therefore made FINAL.

3. During the examination process, it came to examiner's attention that claim 20 should not be grouped with species I, II or III. Claim 20 should be grouped with species IV (or V) since species IV (or V) has a special technical feature in which species I, II or III are lacking. As indicated in the election/restriction requirement mailed on 8/4/05, species IV has been identified as shown in Figs. 7 and 8. The special technical feature of species IV has been identified as the particular of a first mixing matrix interconnected to the stereo inputs and a series of feedback inputs from a filter system claimed therein. Therefore, it is clearly that claim 20 should not be grouped with species I since species I, as shown in Figs. 3 and 4, does not have a series of feedback inputs from a filter system to be mixed with a first mixing matrix. Examiner would like to apologize for the error.

4. Claims 6, 13-20, 21-35, 50 and 51 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 8/8/05.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 11, 12, 42 and 49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 11, "a first series of early reflection response filter" and "a second series of reverberant tail filters" are not correct terms for describing the invention as shown in Fig. 4. For examination purpose, it is assumed that they are in parallel.

Regarding claim 42, line 2, "the binaural room response" lacks antecedent basis.

Regarding claim 49, lines 2-3, "said filter coefficients" lack antecedent basis.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-4, 47 and 49 are rejected under 35 U.S.C. 102(e) as being anticipated by Cashion et al (US005809149A).

Regarding claim 1, Cashion discloses an apparatus for creating, utilizing a pair of oppositely opposed headphones (col. 1, lines 7-9), the sensation of a sound source being spatially distant from the area between said pair of headphones (col. 2, line 38 through col. 3, line 6), said apparatus comprising:

- (a) a series of audio inputs (30, 30') representing audio signals being projected from an idealized speaker located at a spatial location relative to an idealized listener (col. 2, lines 42-44);
- (b) a first mixing matrix means (32, 32', 34, 34', 110-132) interconnected to said audio inputs for outputting a predetermined combination of said audio inputs as intermediate output signals;
- (c) a filter system (88, 90, 92, 94, 98, 46, 48, 50, 52) for filtering said intermediate output signals and outputting filtered intermediate output signals; said filter system including separate filters for filtering the direct response (46, 48, 50, 52) and short time response (88, 90, 92, 94) of a room and an approximation to the reverberent response (96, 98) of a room; and
- (d) a second mixing matrix means (170, 172) combining said filtered intermediate output signals to produce left and right channel stereo outputs.

Regarding claim 2, Cashion shows that said first mixing matrix means outputs a linear combination of said audio inputs.

Regarding claim 3, Cashion shows that said first matrix means applies a time varying gain to said audio inputs (by 39 to 38 and 40 for example).

Regarding claim 4, Cashion shows that said filters are independent of one another.

Regarding claim 47, Cashion shows that said apparatus is implemented utilizing a separately detachable external device (col. 1, lines 19-20; home personal computer is a separately detachable external device) connected intermediate of a sound output signal generator (video game disk or disc) and said headphones said sound output signals being output in a digital form (video game disk or disc for PC is inherently in digital form) for processing by said external device.

Regarding claim 49, Cashion shows that said apparatus further comprises a variable zoom control adapted to alter said filter coefficients in accordance with a control setting so as to alter a perceived distance of the sound source response (col. 4, lines 38-43; col. 2, lines 48-62).

Claim Rejections - 35 USC § 103

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

11. Claims 5, 7, 8, 11, 12 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cashion in view of Davis et al (US006449368B1).

Regarding claims 5, 7, 11 and 12, Cashion fails to explicitly show Dolby AC-3 inputs. However, Cashion suggests that the system is used for modified the audio

signal for a video game played on a computer (col. 1, lines 19-21). Davis et al (hereafter Davis) teaches that the Dolby AC-3 format has been used for video game intended to be played on a computer (col. 1, lines 12-16). Cashion teaches a general sound processing system for simulating the direct, early reflection and reverberation response for a sound source. One skilled in the art would have expected that same concept of simulating the direct, early reflection and reverberation response could be used for any specific sound inputs without generating any unexpected result. Thus, it would have been obvious to one of ordinary skilled in the art to modify Cashion's system in view of Davis by modifying the system to accommodate the AC-3 inputs in order to allow the user to have a more realistic sound imaging playing video game with Dolby AC-3 format.

Regarding claim 8, Cashion shows that the inputs are summed before input to the second filters (138, 140).

Regarding claim 40, Cashion shows that said apparatus is implemented utilizing a separately detachable external device (col. 1, lines 19-20; home personal computer is a separately detachable external device) connected intermediate of a sound output signal generator (video game disk or disc) and said headphones said sound output signals being output in a digital form (video game disk or disc for PC is inherently in digital form) for processing by said external device.

12. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cashion in view of Davis as applied to claims 5, 7, 8 and 40 above, and further in view of Lin et al (US006091824A).

Regarding claims 9 and 10, Cashion fails to show the filter lengths for each filter. However, Cashion suggests the taps for both the early reflection filter and reverberation filter. Lin et al (hereafter Lin) teaches that, as shown in Fig. 2A or 4A, the time for simulating the early reflection is substantially shorter than the time for simulating the reverberation. Therefore, one skilled in the art would have expected that the early reflection filter would have a short filter lengths and the reverberation filter would have a longer filter length. Lin further teaches that the simulated time is based on the simulated environment, such as soft wall, hard wall and concert hall. One skilled in the art would have expected that the time for simulating the room with a soft wall would be shorter than the room with a hard wall. One also would have expected that the time for simulating a large room would be longer than the time for a smaller room. The number of taps, which signifying the time delay, in each filter would be adjusted to fit each individual simulated environment. Thus, it would have been obvious to one of ordinary skill in the art to further modify Cashion and Davis in view of Lin by adjusting the number of taps in the early reflection filter and the reverberation filter in order to more closely simulating the sound source environment.

13. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizume et al (US 6,269,061) in view of Cashion.

Regarding claim 43, Shimizume et al (hereafter Shimizume) disclose a skip protection processor unit (22, 23; col. 8, lines 32-35) located inside a CD-ROM player unit (col. 22, lines 1-4). However, Shimizume fails to show how to creating the sensation of a sound source using headphones. Shimizume teaches a general sound

player for decoding the audio signal stored on a storage medium. The audio signal is being processed without providing any realistic effect. Cashion teaches a system for creating 3D audio imaging over headphones. Thus, it would have been obvious to one of ordinary skill in the art to modify Shimizume's system by utilizing the processing circuitry as taught in Cashion in order to allow the user to listen to a more realistic sound effect using the headphones.

14. Claims 44-46 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cashion in view of Lee (US 5,590,204).

Regarding claims 45, 46 and 48, Cashion discloses a general sound processing circuit without specifying the nature of the input signals as in an analog or digital form. However, Cashion suggests that any kind of input signals could be used (col. 7, lines 58-62). Therefore, one skilled in the art would have expected that Cashion's system could process analog inputs without generating any unexpected result. Of course, one has to make sure that the analog inputs be converted to digital signals if Cashion's system using digital filters. Cashion teaches FIR or IIR filters (col. 5, lines 48-64; col. 8, lines 45-46; and col. 9, lines 51-54) which are digital filters. Lee teaches, in Fig. 1, the layout of converting analog inputs to digital inputs using ADC (10), processing the digital signals using FIR filters (col. 5, lines 19-22) programmed using DSP (30, 70) and converting the processed digital signals to analog signals using DAC (80). Thus, it would have been obvious to one of ordinary skill in the art to modify Cashion in view of Lee by utilizing the ADC, DSP and DAC in order to process analog input signals to be generated by the headphone.

Regarding claim 44, although Lee fails to show that the digital circuit elements are implemented utilizing a dedicated integrated circuit, it was well known in the art that such digital circuit elements are implemented utilizing a dedicated integrated circuit.

15. Claims 36 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizume et al (US 6,269,061) in view of Cashion as applied to claim 43 above, and further in view of Klayman (US005970152A).

Regarding claim 36, Shimizume and Cashion fails to explicitly show Dolby AC-3 inputs. Shimizume teaches a general disk player without specifying the audio format for the disc. However, Cashion suggests that the system could be used for any input signals (col. 1, lines 19-21). Klayman teaches that the Dolby AC-3 format has been used for storing audio information on compact disc (col. 5, lines 52-63). Cashion teaches a general sound processing system for simulating the direct, early reflection and reverberation response for a sound source. One skilled in the art would have expected that same concept of simulating the direct, early reflection and reverberation response could be used for any specific sound inputs without generating any unexpected result. Thus, it would have been obvious to one of ordinary skilled in the art to further modify Shimizume and Cashion's system in view of Klayman by modifying the system to accommodate the AC-3 inputs in order to allow the user to have a more realistic sound imaging playing CD with Dolby AC-3 format.

Regarding claim 42, Cashion shows the zoom control.

16. Claims 37-39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cashion in view of Davis as applied to claims 5, 7, 8 and 40 above, and further in view of Lee.

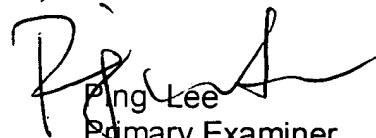
Regarding claims 38, 39 and 41, Cashion discloses a general sound processing circuit without specifying the nature of the input signals as in an analog or digital form. However, Cashion suggests that any kind of input signals could be used (col. 7, lines 58-62). Therefore, one skilled in the art would have expected that Cashion's system could process analog inputs without generating any unexpected result. Of course, one has to make sure that the analog inputs be converted to digital signals if Cashion's system using digital filters. Cashion teaches FIR or IIR filters (col. 5, lines 48-64; col. 8, lines 45-46; and col. 9, lines 51-54) which are digital filters. Lee teaches, in Fig. 1, the layout of converting analog inputs to digital inputs using ADC (10), processing the digital signals using FIR filters (col. 5, lines 19-22) programmed using DSP (30, 70) and converting the processed digital signals to analog signals using DAC (80). Thus, it would have been obvious to one of ordinary skill in the art to further modify Cashion and Davis in view of Lee by utilizing the ADC, DSP and DAC in order to process analog input signals to be generated by the headphone.

Regarding claim 37, although Lee fails to show that the digital circuit elements are implemented utilizing a dedicated integrated circuit, it was well known in the art that such digital circuit elements are implemented utilizing a dedicated integrated circuit.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Lee whose telephone number is 571-272-7522. The examiner can normally be reached on Monday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Ping Lee
Primary Examiner
Art Unit 2644

pwl